

Points in melting Silver

one Crucible, worth, \$50 --

2 " " \$100

will last 24 days

will melt 20 000 ^{oz} per melt.

or say 5 melts per day = 100,000 ^{oz}

~~\$~~ or in 24 working days 2,400,000 ^{oz}

\$100. worth steel crucible melts 2,400,000 ^{oz}

6 black lead crucibles \$70 worth @ 3¢

per \$ 420 ^{oz} @ 3¢ = \$12.60

each crucible will last 4 days.

24 days = 4 x 6 days

hence cost = \$12.60 x 6 = \$75.60

~~Crucible~~ 1 melt = 3000 ^{oz}.

6 melts x 6 furnaces = 36 melts per day

36 melts x 3000 ^{oz} = 108 000 ^{oz} per day

108,000 ^{days} x 24 = 2,592,000 ^{oz}.

For melting silver ^{Points in melting silver} not Gold (Iron) 2

1. Steel crucible, can be made of any form & size; & seem to resist fire pretty well the Expt. made, not a fair test of wear — but assumed as $\frac{1}{2}$, — life of X = 24 days.

~~See~~ See points page 1. (over)
not much diff. in cost, compared with blk. lead. — attendance cheaper

2. Furnace. ~~Ponsard's~~ ^{less} Importance of neutral flame, ^{never} rather neutral or slightly ~~rather excess of oxygen~~ ^{not of reducing gas}, — the former burns off copper, & tends to oxidize silver. ^{altering standard}
hence necessity of control of air entering ^{proportion of} ~~to the~~
Too high heat would volatilize silver; —
hence necessity of control of heat.

3. Ponsard's furn. less under control in these respects, & better adapted to work as it is used

4. Seltzer's rivet heating furnace seems to combine the ~~advantage~~ points req^d — for our use

He saw it a full red heat ^{admirable} ~~good~~ for heating rivets, but not bright red ^{sufficient} for silver.

I doubt not ^{The flame can be made} ~~the crucible~~ make it oxidizing or reducing — & a little experience would enable workman to judge of the ^{due} proportion for silver.

I doubt not but that it could be made to produce a higher heat, also well proportioned in air & gas, ~~altho~~ ^{altho} ~~but~~ we did not see it so —

The fire would be on one side, (~~best~~ ^{best} probably best at the back) & two or perhaps more crucibles in front heated by the one fire.

~~Comparison~~ ^{Comparison} of two modes of heating with crucibles, convenience of access, & pouring off residue by lifting ^{up} ~~out~~ pot. work on small quantity with one fire increase of furnaces, increase quantity with ^{the} addition. — disadvantages, ladling out metal, spilling & splashing, — dropping into the fire, volatilization. — quantity of grains produced, distributed among

Points in melting silver much 4

ashes, ~~ore~~ cinder, &c. — no doubt adds to the absolute losses in working gold & silver.

Sellers proposes to work the Rivet furnace ^{especially contrived} of a form adapted to heat two ~~of~~ ^{for} melting crucibles, made of cast steel, of some 20 inches depth to hold about 10,000 oz. each with a pipe ^{drawn straight} leading off from the bottom ^{to a point} outside the great heat of the fire, & yet so surrounded with flange, as to keep the silver contained in the pipe fluid to the end, & ready to be tapped at any moment. This system presents the advantages that even if the metal were ladled out as usual (without the use of the tap), the spilling would be on the hearth of the furnace from which it would be easily gathered, without intermix. of cinder &c — a more cleanly operation. — Same access to surface of metal to flux.

Undoubtedly, ~~but~~ ^{neater & better} to heat ~~X~~ ^{at} apart from contact with fuel, by flame.

Economy of Fuel X. & blk ld X. (Sep. 1).

Before determining the ~~set~~ value of the Rivet furnace ~~(modified for silver)~~ compared with our present (the practical method is the only one) that of using the furnace for melting the usual quantities employed. To do this the furnace modified ~~as well as can be done~~ to take in a pot of ~~the~~ sufficient size for melting a quantity of metal, say 300 to 3000 oz. It should then be filled with the requisite quantity of copper, as representative of silver, instead of not being silver itself.

a question whether the ^{real} gain that in ~~an~~ Rivet furnace with steel crucible would cost less than our present Blk ld ~~X~~ ~~plain~~ furnace. 2: Whether the gain in the ~~steel~~ ~~for~~ ~~as~~ ~~plain~~ furnace ~~Steel~~ X, would be sufficient to warrant its substitution for Blk D. without further experiments.